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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/519,741 | 11/04/2005 | Ludwig Dittmar | 2002 P 09188 US | 9239 |
| 48154 | 7590 | 04/27/2006 | EXAMINER | |
| SLATER & MATSIL LLP 17950 PRESTON ROAD SUITE 1000 DALLAS, TX 75252 | | | DINH, THU HUONG T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2812 | |

DATE MAILED: 04/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/519,741

Applicant(s)

DITTMAR ET AL.

Examiner

Thu-Huong Dinh

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/04/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 11/04/2005 (4/25/05) and (4/26/05) TAD
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

WALTER LINDSAY JR.
PRIMARY EXAMINER

DETAILED ACTION

This Office action is in response to the Continuation filed on November 4, 2006.

Currently, Claim 21 is pending.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant claim: ...wherein a hard mask that is used to probe the contact hole is also used to structure the line. The specification did not teach the hard mask being used as a probe; thus, the method teaches that it is possible to use the resin mask not only for the structuring of the first contact hole, but also for structuring of the conductor. Thus, going forward the claim will be interpreted as: ...wherein a hard mask that is used to provide the contact hole is also used to structure the line.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carter et al. (U.S. Patent No. 6,423,627 filed on September 28, 1999) in view of Lucas et al. (U.S. Patent No. 6,287,951 filed on December 7, 1998).

Carter et al. shows the structure substantially as claimed in Figure 1G and corresponding text as: ...contact holes are formed in the insulation layer (Column 5, lines 17-20). Carter et al. does not disclose expressly ...filling the contact hole with contact material so that the contact material is electrically connected to a line; wherein a hard mask that is used to provide the contact hole is also used to structure the line.

Lucas et al. teaches a conductive films are deposited within the openings as illustrated in Figure 9 (Column 8, lines 48-51) and the interconnect member provides an electrical connection to the gate electrode of transistor (Column 8, lines 27-31). In addition, Lucas et al. teaches if necessary, or so desired, a hardmask layer can be used to form the openings for the inlaid interconnect structures (Column 8, lines 52-60).

Both Carter et al. and Lucas et al. are analogous art because they are from the same field of endeavor of forming a mask.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Lucas et al. process for forming a hardmask to Carter et al. method for forming memory array contacts in order for the integrated circuit may be fabricated more efficiently both in terms of cost and processing time.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cheong et al. (U.S. 6,521,508 filed November 27, 2000) teaches Method of manufacturing a contact plug in a semiconductor device using selective

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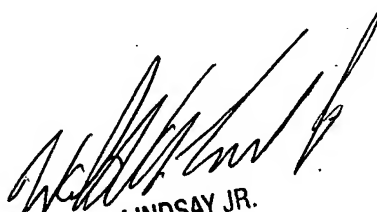
epitaxial growth of silicon process. And Chang et al. (U.S. Patent No. 6,232,238 filed February 8, 1999) teaches Method for preventing corrosion of bonding pad on a surface of a semiconductor wafer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu-Huong Dinh whose telephone number is 571 272-9014. The examiner can normally be reached on Monday through Friday (8:30AM-5:00PM Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

thd


WALTER LINDSAY JR.
PRIMARY EXAMINER